



DIGITAL DATA RECORDER M201



KENNEDY COMPANY

One machine writes and reads

Compact data storage.

Easy, quick loading.

Simple, reliable mechanism.

Fast operation.

Data logging

Communications,

Numerical control,

Computer input-output,

Automatic check-out

GENERAL

Digital Data Recorder M201 opens entirely new opportunities in digital data storage. Magnetic tape convenience, speed and simplicity are brought into the cost realm of punched tape.

One relatively inexpensive machine can both write and read data at rates difficult to achieve reliably with paper tape devices. Records in compact magazine form are easily handled and filed or reused.

Any data that can be recorded on eight level punched tape can be recorded and read on the M201. Data rates up to 65 alpha-numeric characters per second can be accommodated starting and stopping for each character.

Inputs and outputs are arranged to be directly interchangeable with paper tape equipment. Alternatively the M201 may be driven from low level logic without intervening power amplifiers or relays. Outputs are isolated contact closures—one for each of the eight data channels.

SYSTEMS FEATURES

The M201 is particularly useful in systems requiring data speed change. Data acquired at a high rate may be read, say, into an electric typewriter at any suitable lower rate. In such an application, the M201 will save the cost of providing two machines, a high speed tape punch and tape reader.

Cartridge loading provides simple operation together with compact tape storage. Standard EIA RS-26A cartridges are accepted. Each cartridge of 600 foot capacity will hold data equivalent to 3000 feet of punched tape. In loading, the cartridge is simply snapped into place, the Load-Lock lever is put in the Lock position and the M201 is ready to go.

A selector switch determines function, read or write. In writing, old information on the tape is automatically erased as new data is recorded.

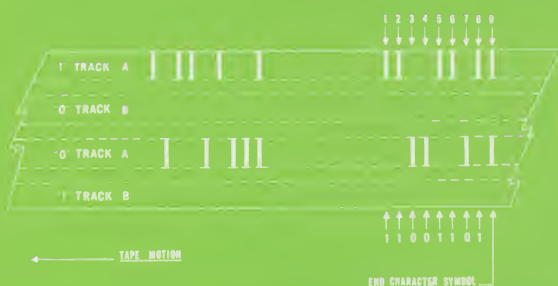
An interlock together with a snap-out section in the cartridge prevents writing on tape which is meant to be preserved. Other interlocks are provided to assure proper operation.

When writing, data levels corresponding to the desired character are applied to the input lines and a start pulse is given. The M201 starts, records the character and stops. A return level indicates signal recorded.

On reading, a start pulse causes the tape to be driven. Tape motion continues until a character has been read and the end of character mark is detected. The M201 then stops and its output relays pull in. A return level indicates a character has been read. Relays remain pulled in until the next start pulse when the cycle is repeated.

Each character read is checked as a precaution against errors. Checking consists of a count of ones and zeroes in a character. Since a total of eight must be obtained, loss or addition of any number of bits is readily detected. In

M201 Tape Format



the event an error is found an error output signal is given which may be used externally.

Of course external parity checking is also possible if desired since the eight bit capacity allows for a check bit in the recorded code.

MACHINE DESCRIPTION

The M201 utilizes two track recording on $\frac{1}{4}$ inch magnetic tape to record all eight information channels. This is accomplished by recording the information serially in small blocks. Inputs are converted from parallel to serial in an internal shift register and recorded on the tape at 400 bits per inch with binary ones in one track and zeroes in the second track. At the end of character both a one and a zero are recorded. Thus nine serial bits are recorded for each 8 bit character occupying .023". A gap of approximately .015" is left between characters for start-stop space. Each character then occupies about .040" or 25 characters per inch.

On reading, information from the tape is stored in the internal shift register from which it is presented as 8 parallel relay contact closures.

M201 drive mechanism is extremely simple. Pinch roller drive is used with a constant speed capstan resulting in a tape speed of 3.5 inches per second. Start and stop times are less than 3 msec. Internal reels in the tape cartridge are driven by torque motors. Spring loaded shock levers isolate the rapid starts and stops from the reels. Thus only one part, an inexpensive and easily replaceable pinch roller is subject to wear.

INTERNAL ELECTRONICS

All logic required for machine operation is self-contained. Solid state read-write amplifiers record and read data on tape under control of the logic section which times start-stop motion and provides the necessary parallel-serial and serial-parallel conversions.

Output relays are dry reed type with rated life in excess of one hundred million operations.

While eight data channels are provided it is not necessary that all be used. Any code can be accepted up to the eight bit capacity.

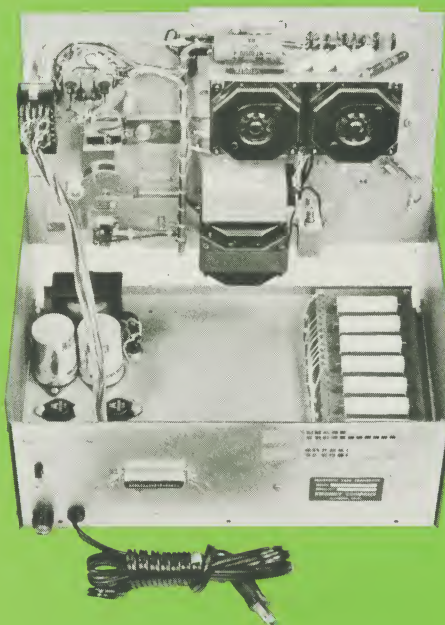
Input levels correspond to standard logic practice facilitating connection to exterior information sources. Contact outputs assure isolation and allow voltage levels to be selected independent of M201 logic.

MACHINE CONSTRUCTION

The M201 is built for long trouble free service. The design is conservative in all respects. Because of the inherent mechanical simplicity opportunities for failure are minimized. Reliable, solid state electronics performs functions for which mechanisms are required in conventional paper tape equipment. No cams, clutches, link-



Solid State electronic section includes all necessary logic and amplifiers



Easy servicing is assured by accessibility of all parts.

ages or rapidly rotating shafts are present to cause potential wear problems and elaborate maintenance.

M201 maintenance consists primarily of an occasional cleaning of tape path surfaces.

Both table and rack mounted versions are available. Standard colors are light gray panel with slate gray case. Special finishes to match existing color schemes are available on special order.

Specifications

M201 DIGITAL DATA RECORDER

Character read/write rate	65/second asynchronous
Number of channels	8
Tape speed	3.5 inches/second
Start-stop time	3 msec (max.)
Tape width	1/4 inch
Rewind time	30 sec. (approx.)
Cartridge type	EIA RS-26A
Cartridge tape capacity	600 feet 1 mil (3M No. 8000)
Cartridge information capacity	350,000 characters (600 ft.)
Controls	Load-Lock lever
	Function selector
	Read
	Rewind
	Fast Forward
	Write
	Remote
	Wind pushbutton
Channel input signals	Ground Input
	for Logic One
	(one per channel)
Start Signal	Ground Input
	for Start
Data output contacts	One form A per channel
	Load 15 watts resistive
	1 ampere, 250 volts
Sync output contact	One form A closes for
	10 msec at end of machine cycle.
Return output	0 to —12 V level, operation
	completed
Error output	0 to —12 V level, error
Interlocks	Cartridge unlocked
	Broken tape
	End of tape
	Write lock-out
Power requirements	115V, 60 cps, 1 amp
Size	13 1/8 x 8 3/4 x 6 5/8 deep
Weight	25 lbs.



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